

RESTORATION PLAN MAGPIE FOREST PULLMAN, WA



View of Magpie Forest from the north side.

Located at:
S1/2, Sec. 28, T. 15 N., R 45 E.
Whitman County

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Restoration Ecology
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1.0 INTRODUCTION

Magpie Forest is the local name given to a natural area located along the northeast edge of the City of Pullman, in Whitman County. It is thought that this 14-acre, primarily undisturbed, site includes a remnant of the endangered Palouse Prairie (Fig. 1). It is important to note, for those not familiar with the Palouse Prairie, that agriculture and development have destroyed 99 percent of this unique landscape [7].



Figure 1. Aerial Photo of Magpie Forest and surrounding landscape, http://secondopinion.typepad.com/restoration_ecology/

In honor of Earth Day, 2005, Washington State University (WSU) purchased the “Magpie Forest” and surrounding property, a parcel totaling 33.3 acres. This site was purchased not only for conservation purposes, but also to provide an outdoor teaching and research facility for WSU staff and students. Since the purchase of this ecologically valuable property, WSU has realized that continued human use of the property and the encroaching development necessitates a restoration plan for further preservation.

2.0 RESTORATION NEED AND RATIONALE

The restoration of Magpie Forest, in association with the production of educational materials relating to the site, provides the opportunity for a valuable asset to the entire community. The unique landscape and location of Magpie Forest provide many positive elements that support the future protection and restoration of the site, these include:

- Unique, relatively undisturbed, habitat provides a reference for other local disturbed Palouse Prairie sites; it is an important natural history resource.
- Valuable education potential for local grade schools and high schools, WSU students and researchers and those in the Moscow-Pullman community.
- Distinctive near-by urban locale allows for ease in educational trips to the site.
- Conservation of rare Palouse wildflowers (specifically the Ladyslipper Orchid and the Palouse Milk-vetch).
- Research of ecosystem dynamics and restoration techniques in this fragmented Palouse Prairie (Seed bank dynamics, soil biota and microbial ecology, genetic diversity and population dynamics of organisms, controlled fire effects on plant species and community structure, and weed ecology and invasion resistance) [7].

The Magpie Forest site is a rare example of the distinctive Palouse Prairie and an urban, undisturbed mesic shrub forest. This site must be conserved and restored to continue as a valuable resource to the community.

3.0 SITE DESCRIPTION

The Magpie forest is located within the Palouse Bioregion; the Palouse bioregion covers 16,000 km² in west central Idaho, southeastern Washington, and northeastern Oregon between the western edge of the Rocky Mountains and the Columbia River basin [1]. The Palouse Bioregion has seen significant changes in the environment from the 1700's when the Nez Perce Indians inhabited the land, to the 1870's when European-Americans began settling the area, to the current day. This area has shifted from perennial native grass, shrub and forest vegetation to primarily agricultural land, causing considerable effects on the native flora and fauna of the Palouse Prairie [1].

The Magpie Forest is located, more specifically, in Whitman County, Washington. A legal description is provided for the property (See Attachment “A”) and a GIS map delineating the boundaries of the property is also provided (See Attachment “B”). The vegetated “Magpie Forest” area is only a portion of the entire property currently owned by WSU. The forest encompasses 14 acres of the entire 33.3-acre site.

3.1 Zoning and Land Use

The local zoning and land uses can have significant results on the success of the conservation and restoration of the site. An increase in development and density around the Magpie Forest can also signify an increase in human disturbance. It is a surprise that the Magpie property has not seen significant disturbance in recent years and it is important to learn the local land use regulations to ensure that future disturbance is avoided. The following is a summary of the zoning and land use information available for the site:

Current Zoning: the site, and the county property located to the north, is Cluster Residential District Zoning. This zoning allows for single-family homes developed on lots of five acres or more, Ginny Rumiser, County Permit Technician (personal communication, September 14, 2006).

Current Land Use: The parcel under the ownership of WSU currently is undeveloped. Varying types of development are surrounding the parcel. The areas to the north and east of the property are developed with single-family homes (as allowed by the current county code). The land to the south is located within the City of Pullman city limits and is developed with high density multi-family housing (apartments) and the land located directly east of the property is also located with the city limits and is developed with industrial uses; the building currently located closest to the WSU property performs isothermal research.

Possible Future Zoning: Although the property is located in the county, it is located within the City of Pullman's Urban Growth Boundary (UGB). This boundary signifies the direction the city intends to annex and incorporate property in the future. The areas located within the UGB also are provided with a pre-zone. The pre-zone signifies what zoning district the parcel would be assigned when it is incorporated. The magpie property has an R4, High Density Residential Development, pre-zone.

R4, High Density Residential Development zoning districts provide for a 5,000 square foot minimum lot size and can be developed to a density of 1,000 square feet per dwelling unit (500 square feet per dwelling unit if a conditional use permit is obtained). To clarify, a 5,000 square foot lot located in an R4 zoning district could potentially have a five-unit apartment building (5,000 sq. ft. divided by 1,000 sq. ft. per dwelling unit).

Environmental Regulations: Whitman County does not provide any environmental regulations that would limit development of the parcel; specifically there would be no regulations for the Magpie Forest portion of the site.

As indicated, the parcel is located within the City of Pullman's UGB. If the parcel were to be incorporated, the city would provide additional protection through environmental regulations. As provided for in subsection 16.50.440(c) of the Pullman Critical Areas Ordinance, upon incorporation Magpie Forest would be regulated as a "Habitat of Local Importance". Habitats of local importance are provided with additional protection from future development on and surrounding the site. Any development within 200 feet of the site (including the anticipated multi-family housing located south of the property) would be required to receive city approval for potential impacts to the Habitat of Local Importance. In order to obtain this approval the applicant would be required to produce a critical areas report analyzing the potential impacts of development, and any associated recommended buffers for protection of the site, for city review [3]. The City of

Pullman Planning Director anticipates that the buffer would be between 25 and 50 feet, Pete Dickinson, City Planning Director (personal communication, October 4, 2006).

Potential Annexation: After preliminary research it seems there would be several benefits to annexation of this site into the City of Pullman, the two most important include:

1. **Habitat Protection:** The most influential benefit to annexation would be the additional protection provided by the city through the critical areas ordinance. Future development adjacent to the site would be required to identify and mitigate any potential impacts to Magpie Forest, and would have a mandatory buffer from the site. Whitman County does not have any regulations to protect the rare habitat.
2. **Future Land Sales:** If, in the future, WSU would need to sell any of the lots adjacent to Magpie Forest, it is expected that there would be a greater profit if the land were located within the city. The county zoning regulations provide for a minimum of 5 acres per lot, and the city would allow for 5,000 square feet per lot. This would also allow for the sale of smaller parcels located further from the actual Magpie Forest area.

It would be a recommendation that annexation be incorporated into the restoration plan to assist in future protection of the site.

3.2 Topography and Soil Types

The Palouse Prairie is comprised of moderately to strongly dissected loess-covered basalt plains, hills with large steptoes, undulating plateaus, and some river breaklands [2]. The plateaus and steptoes were deposited by southwest winds, and therefore, the most significant slopes are located on the northeast side of the hills. Elevation ranges from 1,200 to 6,000 ft (366 to 1,830 m) [2].

The soils in the area are known for being very fertile, promoting agriculture throughout the Palouse Prairie environments.

The Natural Resource Conservation Service (NRCS) provides a web soil survey of the site that identifies the different soil types present (Fig. 2). The table below will assist in the identification of the map unit number to the soil type.



Figure 2. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Whitman County, Washington			
Map Unit Number	Map Unit Name	Acres in Area	Percent of Area
54	Latah silt loam	1.1	2.3
59	Naff silt loam, 7 to 25 percent slopes	10.8	21.9
65	Palouse silt loam, 7 to 25 percent slopes	34.1	69.2
104	Thatuna silt loam, 7 to 25 percent slopes	1.3	2.6
112	Tilma silt loam, 25 to 40 percent slopes	2.0	4.0

The two primary soils found on the site are the Naff Silt Loam and the Palouse Silt Loam [5]. These are deep, well-drained soils forming in loess. When viewing the soils map it is evident that the Magpie Forest is almost entirely comprised of these two soils.

3.3 Climate

The climate for the Palouse Prairie is temperate, with a maritime influence. Temperature averages 45 to 54°F (7 to 12°C). The growing season lasts 100 to 170 days. Precipitation ranges from 10 to 30 inches (250 to 760 mm), evenly distributed throughout fall, winter, and spring. Winter precipitation is mostly snow, or rain on snow and the summers are typically hot and dry [6].

3.4 Vegetation

The Magpie Forest is one of the few remaining sites surrounding the City of Pullman that has retained a high degree of vegetative diversity (most sites are greatly affected by human disturbance). This site is home to a variety of native and introduced trees, shrubs, grasses, and plants, including two rare Palouse wildflowers, the Ladyslipper Orchid and the Palouse Milk-vetch. Dave Skinner, from the USDA NRCS Plant Materials Center at WSU, prepared the following plant list for Magpie Forest. For ease in comparison, I have separated the plants into two sections; native and introduced plants:

Native Plants:

Scientific name	Common Name	Family	
<i>Achillea millefolium</i>	Yarrow	Asteraceae	native
<i>Agropyron spicatum</i>	Bluebunch wheatgrass	Poaceae	native
<i>Amelanchier alnifolia</i>	Serviceberry	Rosaceae	native
<i>Apocynum androsaemifolium</i>	Spreading dogbane	Apocynaceae	native
<i>Astragalus arrectus</i>	Palouse milkvetch	Fabaceae	native
<i>Camassia quamash</i>	Common camas	Liliaceae	native
<i>Carex geyeri</i>	Elk sedge	Cyperaceae	native
<i>Collinsia parviflora</i>	Blue-eyed mary	Scrophulariaceae	native
<i>Crataegus douglasii</i>	Douglas hawthorn	Rosaceae	native
<i>Cypripedium montanum</i>	Mountain lady-slipper	Orchidaceae	native
<i>Elymus glaucus</i>	Blue wildrye	Poaceae	native
<i>Erythronium grandiflorum</i>	Glacier lily	Liliaceae	native
<i>Galium boreale</i>	Northern bedstraw	Rubiaceae	native

<i>Geranium viscosissimum</i>	Sticky geranium	Geraniaceae	native
<i>Geum triflorum</i>	Prairie smoke	Rosaceae	native
<i>Helianthella uniflora</i>	Little sunflower	Asteraceae	native
<i>Heracleum lanatum</i>	Cow parsnip	Apiaceae	native
<i>Hieracium albertinum</i>	Western hawkweed	Asteraceae	native
<i>Holodiscus discolor</i>	Oceanspray	Rosaceae	native
<i>Iris missouriensis</i>	Western iris	Iridaceae	native
<i>Lithophragma parviflora</i>	Prairie star	Saxifragaceae	native
<i>Lithospermum ruderale</i>	Columbia puccoon	Boraginaceae	native
<i>Lomatium dissectum</i>	Fern-leaf lomatium	Apiaceae	native
<i>Lomatium macrocarpum</i>	Grey lomatium	Apiaceae	native
<i>Lomatium triternatum</i>	Nine-leaf lomatium	Apiaceae	native
<i>Lupinus sericeus</i>	Silky lupine	Fabaceae	native
<i>Madia gracilis</i>	Slender tarweed	Asteraceae	native
<i>Mahonia repens</i>	Creeping Oregon grape	Berberidaceae	native
<i>Microsteris gracilis</i>	Pink microsteris	Polemoniaceae	native
<i>Montia perfoliata</i>	Miner's lettuce	Portulacaceae	native
<i>Navarretia intertexta</i>	Navarretia	Polemoniaceae	native
<i>Osmorhiza chilensis</i>	Western sweet-cicely	Apiaceae	native
<i>Perideridia gairdneri</i>	Yampah	Apiaceae	native
<i>Phlox speciosa</i>	Showy phlox	Polemoniaceae	native
<i>Populus tremuloides</i>	Quaking aspen	Salicaceae	native
<i>Prunella vulgaris</i>	Self-heal	Lamiaceae	native
<i>Prunus virginiana</i>	Chokecherry	Rosaceae	native
<i>Ranunculus glaberrimus</i>	Sagebrush buttercup	Ranunculaceae	native
<i>Rosa nutkana</i>	Nootka rose	Rosaceae	native
<i>Rosa woodsii</i>	Wood's rose	Rosaceae	native
<i>Senecio integerrimus</i>	Western groundsel	Asteraceae	native
<i>Senecio serra</i>	Serrated groundsel	Asteraceae	native
<i>Sidalcea oregana</i>	Oregon checkermallow	Malvaceae	native
<i>Sisyrinchium inflatum</i>	Grass widows	Iridaceae	native
<i>Smilacina racemosa</i>	Western solomon seal	Liliaceae	native
<i>Solidago missouriensis</i>	Missouri goldenrod	Asteraceae	native
<i>Spiraea betulifolia</i>	Birch-leaf spiraea	Rosaceae	native
<i>Symphoricarpos albus</i>	Snowberry	Caprifoliaceae	native
<i>Viola adunca</i>	Long-spurred violet	Violaceae	native
<i>Zigadenus venenosus</i>	Death camas	Liliaceae	native

Introduced Plants:

Scientific name	Common Name	Family	
<i>Anthriscus scandicina</i>	Bur chervil	Apiaceae	introduced
<i>Arctium minus</i>	Common burdock	Asteraceae	introduced
<i>Arrhenatherum elatius</i>	Tall oatgrass	Poaceae	introduced
<i>Bromus japonicus</i>	Japanese brome	Poaceae	introduced
<i>Bromus tectorum</i>	Downy brome	Poaceae	introduced
<i>Bryonia alba</i>	White bryony	Cucurbitaceae	introduced
<i>Cirsium arvense</i>	Canada thistle	Asteraceae	introduced
<i>Cirsium vulgare</i>	Bull thistle	Asteraceae	introduced
<i>Cynoglossum officinalis</i>	Hound's tongue	Boraginaceae	introduced
<i>Dactylis glomerata</i>	Orchardgrass	Poaceae	introduced
<i>Draba verna</i>	Spring whitlow-grass	Brassicaceae	?
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	Cupressaceae	introduced
<i>Lamium purpurea</i>	Red dead-nettle	Lamiaceae	introduced
<i>Lithospermum arvense</i>	Corn gromwell	Boraginaceae	introduced
<i>Myosotis micrantha</i>	Scorpion-grass	Boraginaceae	introduced
<i>Nepeta cataria</i>	Catnip	Lamiaceae	introduced
<i>Phleum pratense</i>	Timothy	Poaceae	introduced
<i>Poa pratensis</i>	Kentucky bluegrass	Poaceae	introduced
<i>Prunus avium</i>	Cherry	Rosaceae	introduced
<i>Prunus domestica</i>	Plum	Rosaceae	introduced
<i>Prunus spinosa</i>	Blackthorn	Rosaceae	introduced
<i>Pyrus malus</i>	Apple	Rosaceae	introduced
<i>Rosa eglantheria</i>	Sweetbriar rose	Rosaceae	introduced
<i>Rumex crispus</i>	Curly dock	Polygonaceae	introduced
<i>Salix alba var. vitellina</i>	Golden willow	Salicaceae	introduced
<i>Sisymbrium altissimum</i>	Tumble mustard	Brassicaceae	introduced
<i>Sorbus aucuparia</i>	European Mt. ash	Rosaceae	introduced
<i>Stellaria nitens</i>	Shining chickweed	Caryophyllaceae	introduced
<i>Taraxacum officinalis</i>	Dandelion	Asteraceae	introduced
<i>Tragopogon dubius</i>	Yellow salsify	Asteraceae	introduced
<i>Ventenata dubia</i>	Ventenata	Poaceae	introduced
<i>Verbascum thapsus</i>	Common mullein	Scrophulariaceae	introduced

The above list includes two introduced species that are considered Class C Weeds on the Washington State Noxious Weed List [8]. The restoration plan should include control and removal of these two introduced species, the Bull thistle and the Canada thistle. An additional introduced plant, the White Byrny, (fig. 3) is also known to have negative effects on wildlife habitat and tree plantings in the region (specifically on Hawthorn thickets, like those typical to the Magpie Forest); it is recommended that this also be controlled and removed [4].



Figure 3. White Byrny (*Bryonia alba*), http://palouseprairie.org/bryonia_alba/

3.5 Wildlife

The Palouse Prairie website provides the following summary of fauna commonly found in Palouse Prairie ecosystems:

Birds are typical of grasslands with intermittent riparian systems and pine hills. Grassland species include American kestrel, ring-necked pheasant, upland sandpiper, western kingbird, horned lark, black-billed magpie, western meadowlark, and savanna sparrow. Riparian system species include Lewis' woodpecker, gray catbird, western bluebird, orange-crowned warbler, northern oriole, black-headed grosbeak, and lazuli bunting. Birds which reach or nearly reach the extent of their range include mountain quail, barn owl, white-headed woodpecker, eastern kingbird, and American redstart. The bald eagle, an endangered species, also occurs around larger water bodies. Typical herbivores and carnivores include white-tail deer, mule deer, and bobcat. Smaller common herbivores include the blacktail jackrabbit and Washington ground squirrel. Rare species include the whitetail jackrabbit, and possibly the pygmy rabbit. Herpetofauna typical of this Section are the bullfrog, painted turtle, western fence lizard, and the northern Pacific rattlesnake [6].

Although this list is very indicative of those species most commonly found in Palouse prairie sites, it would be beneficial to add a component to the restoration plan that proposes a wildlife study specific to the site. It is also important to note that since the European-American settlement in the area the species composition has been shifting and some of the species that were once common in these

environments are now seeing decline and other species are increasing. The table below provides an example of some of the changes occurring in the species composition [1].

Sharp-tailed grouse <i>Pedioecetes phasianellus</i>	Ring-necked pheasant <i>Phasianus colchicus</i>
Black-tailed jack rabbit <i>Lepus californicus</i>	White-tailed jack rabbit <i>L. townsendii</i>
Mule deer <i>Odocoileus hemionus</i>	White-tailed deer <i>O. virginianus</i>
Ferruginous hawk <i>Buteo regalis</i>	European starling <i>Sturnus vulgaris</i>
Spotted frog <i>Rana pretiosa</i>	Bullfrog <i>R. catesbeiana</i>

The wildlife currently inhabiting the Magpie Forest site may also vary from the above summary because of the fragmentation of the habitat, a wildlife study would be the only way to verify what species are present.

4.0 RESTORATION PLAN

The Magpie Forest and surrounding area currently provides great potential for educational and learning opportunities. In order to preserve these opportunities, and potentially create more opportunities, a restoration plan must be established for the site.

4.1 Project Goals

Some of the large goals and expectations that are incorporated into this restoration plan include:

1. Conservation, restoration, and enhancement of the biodiversity in the Magpie Forest and adjacent landscape.

2. The creation of an urban ecological preserve, including the endangered Palouse Prairie habitat.
3. Enhancement of the current site to allow for outdoor environmental educational, teaching, and research opportunities.

4.2 Short-Term Actions

It is intended that these short-term action recommendations be completed within the next one to two years. Although the Magpie site has maintained without significant disturbance for many years, development is becoming increasingly close and ease of human access is amplified. There are several components to the restoration plan that should be completed in the near future. These include:

- Annexation into the City of Pullman. Without the “Habitat of Local Significance” designation and associated regulations provided by the city upon incorporation, development could potentially be built right up to the property line (i.e. a paved parking area). This would be a permanent disturbance and steps should be taken to avoid this.
- Informative signage. People in the community may not be aware of the significance of the site. The site has been used for recreational uses, such as paintball, and the incorporation of several informative signs located along the boundaries of the site may assist in discontinuing this disturbance. (Note: Some signs have already been located around the perimeter of Magpie Forest). Maintenance of these signs would also be a short-term goal.
- Native seed collection and storage. With the recent purchase of the property there have already been numerous visits to the site by WSU students and even volunteer groups. Many of these volunteers and students may not be able to identify rare plants, or native plants. It would be beneficial to preserve some of these rare or significant plant seeds prior to continued disturbance.

- Garbage pick-up. The site has been littered with remnants from paintball and other human disturbance; removal of this debris would assist in reducing future dumping at the site. (Note: there has already been a significant amount of garbage removal from the site.) Continued removal of debris would be necessary for the restoration plan.
- Development of planting plan. There have been some preliminary plantings already this year; the planting of Ponderosa pines in an area west of the Magpie Forest and Bluebunch Wheatgrass in the existing prairie area. This is a solid start, however, there needs to be a more detailed species composition design that encompasses an outline for the future. There is an existing Palouse Prairie remnant located in the northwest portion of the site and an existing mesic shrub forest located toward the northeast portion of the site (fig. 4). Preservation and expansion of these two areas should be given the most attention in the

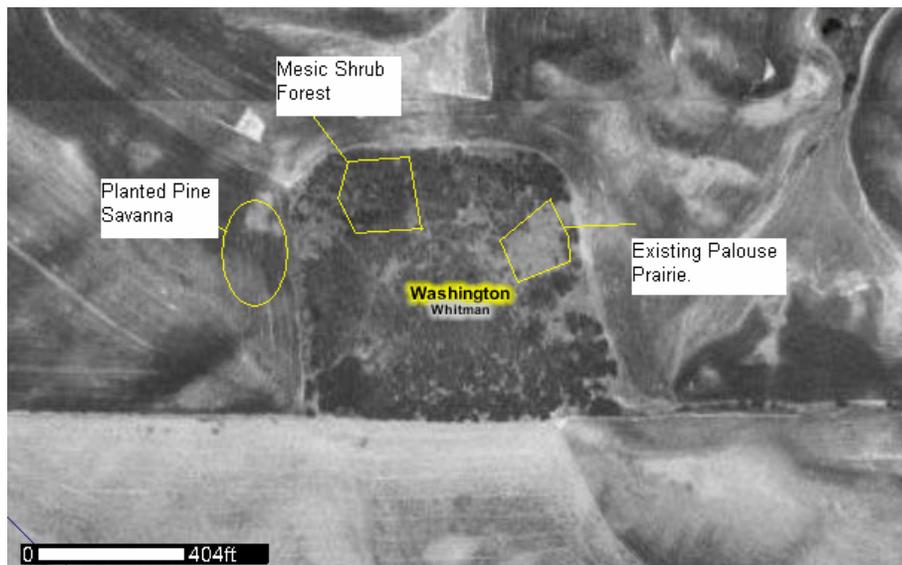


Figure 4. Aerial Map indicating existing areas for attention (mesic shrub forest and Palouse Prairie) and a newly planted area (pine savanna). Photo from: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

planting plan. Also, the planted pine savanna would benefit from a planting plan.

- Weed Control. It is important that existing weeds are controlled and removed (specifically the Bull thistle, Canada thistle and the White

Byrony). The most successful form of weed removal should be identified for each of these plants, and then removal should begin immediately. Also, a study should be completed that analyzes all of the introduced species and verifies which may cause substantial harm to the site and which may actually provide benefit.

- Site specific wildlife study. Although information is available on the types of species most commonly found in this area, it would be beneficial if a site-specific wildlife study were accomplished. This would provide a baseline for success in incorporating wildlife (especially any rare or endangered species) into the design of the site.
- Draft Restoration Plan for public review and implementation. The preparation of a draft Restoration Plan is a large step forward in the preservation of the site. As mentioned before, this is a very urban site located in close proximity to the several communities (including Pullman and Moscow). By introducing the plan to public review there may be some additional valuable information gained. Once all of this information is incorporated, implementation of the plan (possibly in phases) should begin.
- Educational materials. The preparation of a brochure of the Magpie site is close to completion. Once completed, this should be made available to the public. Also, the installation of educational signs and information on the ecology website would assist in providing information about the benefits of Magpie Forest.
- Mapping and design work. There has been some preliminary mapping of the site. However, all of the mapping information, as well as planting plans, wildlife plans, and any recreation plans (paths, picnic areas) etc. should be included with mapping and design of the site. Before any extensive restoration is started, a design is very necessary.

- Existing tree, shrub and grass maintenance. There is a vast diversity in existing vegetation located at the site. Maintenance of this is necessary for continued success of the Magpie Forest, maintenance, including tree and shrub thinning, and burning. This work could be included with the weed removal plan and potentially be accomplished together.
- Utilize community help for restoration projects. Again, this is a very urban site in close proximity to many local schools, Boy Scout groups, and community groups that could be included in restoration projects.

4.3 Long-Term Actions

It is intended that the long-term actions be completed within the three to five year range. Many of the short-term actions mentioned above will continue through the long-term action phase. The following short-term actions should also be considered as long-term actions: continued creation of informative signage and educational materials, native seed collection and storage, garbage pick-up, weed control, existing tree, shrub and grass maintenance and utilization of community help for restoration projects. Restoration of this site will be a continuous, adaptive process. Additional long-term actions include:

- Design of Test Plots. After some of the preliminary restoration work is done, test plots can be established to analyze successful methods of plant establishment, hydrology management, and fuel management.
- Restoration of WSU property surrounding Magpie Forest. There is approximately 19.3 acres of land located adjacent to the Magpie Forest that is owned by WSU and has the potential for restoration also. This site has been highly disturbed by agricultural practices, making this restoration more difficult than that of the Magpie Forest. However, in the long-term actions phase of this restoration plan, a separate restoration plan should be created for this area for an extensive expansion of the existing plant community. This would be a great opportunity for determining if

restoration is possible on a site that is completely barren of any native vegetation.

- Further definition of the use of the space. The short-term actions should provide an increase in the quality of the ecosystem provided at Magpie Forest. Once this ecosystem is considered more stable, WSU can look at further definition of the utilization of the space. This includes exploring the possibility of:
 - A primitive walking path and nature trail with interpretive educational signs.
 - The establishment of a small public park (possibly built on the WSU owned acreage surrounding Magpie Forest). Including the potential issues of road access, parking areas, restrooms, and scheduled garbage removal.
 - The construction of benches and/or an amphitheater.

5.0 ADAPTIVE MANAGEMENT/MONITORING

Monitoring is one of the most important components to a successful restoration plan. Plants do not always thrive as expected, invasive species may begin to outcompete and establish throughout the site, or an unnatural weather occurrence may ensue. It is best to expect the unexpected. Once a planting plan is in place and plants are in the ground, monitoring should begin. Some steps that should be included in the monitoring plan include:

- Permanent photo points. It would be beneficial to choose several different locations within the site to take a photo record of change and growth. The two most significant locations in the short-term would be the Palouse Prairie and the mesic shrub forest. It is imperative that these photo locations be mapped to ensure that future photos are taken in the same place.

- Plant, animal and insect surveys. An annual or semi-annual survey of the vegetation on the site, and wildlife and insects inhabiting the site, would be very valuable information for continued restoration and as a measure of success. As indicated in the photo point's section, it is valuable that those conducting the survey utilize consistent methodology.
- Continued evaluation of the site. Restoration is an adaptive process and continually evaluating and monitoring the site is essential. Continued evaluation may illustrate the need for plant enclosures to protect certain plant species, or may provide for the discovery of a rare plant species not documented in the area previously. It is also important to budget for this adaptive process and realize that additional planting, debris removal, and maintenance may be necessary.

Just as a detailed planting plan is required, a detailed monitoring plan should be produced to measure the success of the planting plan and site restoration.

6.0 COMMUNICATION PLAN/ EDUCATION

Many people in Pullman and the surrounding areas know of the Magpie Forest, or have memories of the landscape. It is a remarkable urban ecological site and the preservation of the site by WSU is a benefit to the community. WSU can continue to foster all of the local interest by communicating the steps taken to restore the site. By doing this, the community will be enthusiastic in assisting with these restoration steps through contributions, or volunteer efforts. The intent of this project is not only to provide educational opportunities to WSU; it is to benefit the community as a whole. Some of the ways to communicate the status of the project include:

- The Ecology website at wsu.edu. There is already a foundation for this. It would not be difficult to add more information to the site. The website address should also be made available to the community (it should be on the Magpie brochure, possibly noted on signs located at the Magpie site,

posted on local environmental groups website, and provided in any environmental newsletters created at WSU).

- Communication with WSU Administration. This restoration project should not only hold importance to those in the environmental departments at WSU, it is important that the administration also be provided with updates on progress.
- Newspaper Articles. Once the draft restoration plan is distributed for public comment, and anytime something significant happens at Magpie Forest, the inclusion of newspaper articles would be advantageous.

The restoration of the Magpie Forest is a very unique opportunity to incorporate the community, WSU, local schools and environmental groups in a cooperative project.

7.0 References

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EXHIBIT A

A parcel of land situate within the S1/2 of Section 28, T 15 N, R 45 E, W.M., Whitman County, State of Washington, and is further described as follows:

COMMENCING: at the SW corner of said Section 28 (S 02°25'42" E 2667.73 feet, from the W 1/4 corner of said Section 28); Thence N 87°42'03" E 1229.96 feet, along the Southerly boundary of said Section 28, to the SE corner of a 30.463 acre parcel of land shown on a survey filed under Whitman County Auditor's Microfilm No. (W.C.A.M.N.) 605295 and subdivided on a plat filed under W.C.A.M.N. 627095 and the point of beginning;

Thence the following 3 (Three) courses along the Easterly boundary of said subdivision:

1. N 00°00'00" W 387.57 feet,
2. N 51°55'35" W 565.69 feet,
3. N 07°48'19" W 327.23 feet, to a point on the southerly right-of-way (R.O.W.) boundary of proposed Pullman north bypass SR 276 and described in a deed filed under W.C.A.M.N. 425044,

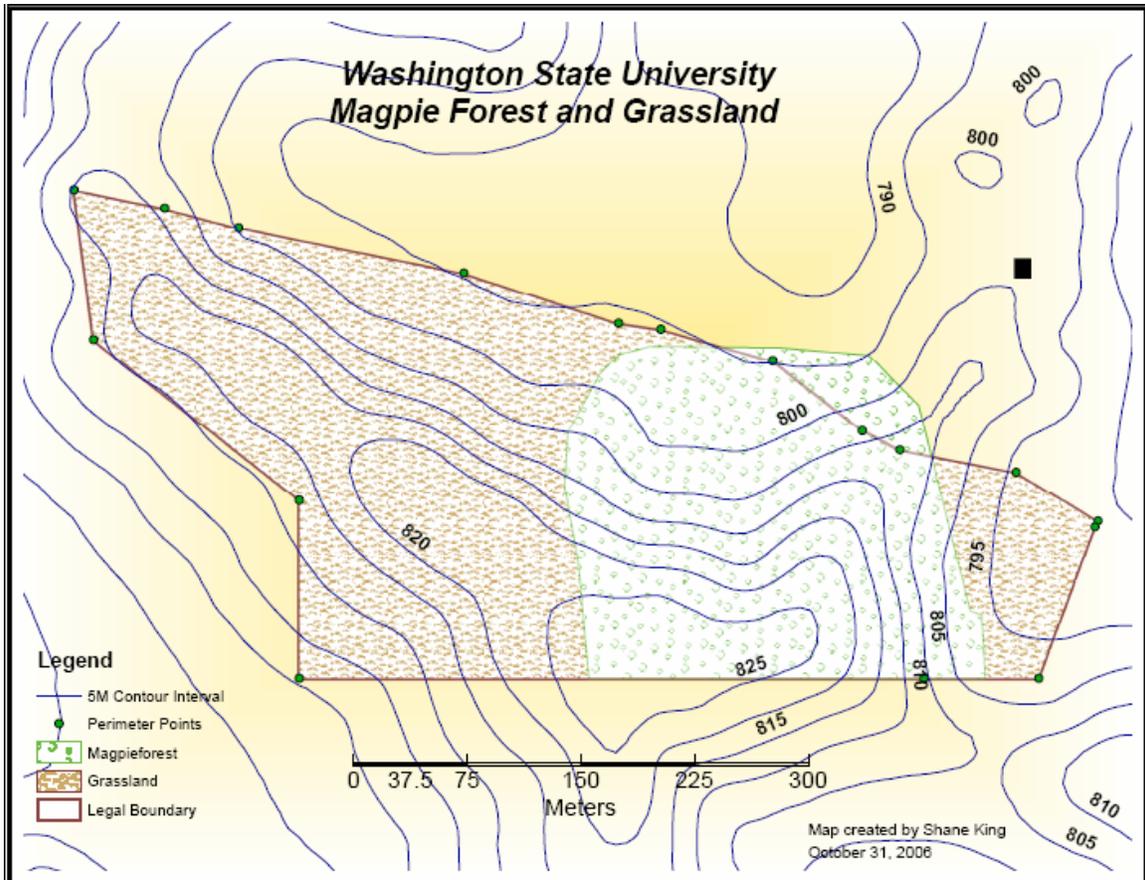
Thence the following 10 (ten) courses along the southerly R.O.W. boundary of said bypass:

1. S 78°42'32" E 200.00 feet,
2. N 74°43'34" E 167.71 feet,
3. S 78°42'32" E 500.00 feet,
4. S 72°11'21" E 352.28 feet,
5. S 80°34'36" E 92.05 feet,
6. S 74°36'18" E 250.47 feet,
7. S 51°46'14" E 247.38 feet,
8. S 64°22'12" E 92.49 feet,
9. S 78°39'48" E 255.33 feet,
10. S 59°42'32" E 206.32 feet, to a point on the westerly R.O.W., boundary of Coliseum Road as shown on the plans of said bypass,

Thence the following 2 (two) courses along the westerly R.O.W. boundary of said Coliseum Road:

1. S 26°17'28" W 16.90 feet, to a point of curvature,
2. 372.06 feet along a curve concave to the SE (central angle = 14°18'25", radius = 1490.00 feet) with its long chord bearing S 19°08'15" W 371.09 feet, returning to the southerly boundary of said Section 28,

Thence S 87°28'35" W 245.71 feet, along the southerly boundary of said Section 28 to the S 1/4 corner thereof; thence S 87°42'03" W 1358.85 feet, along the southerly boundary of said section 28 to the point of beginning.



Attachment "B"